pipes are continued in the interior of the walls down to wells in the basement, the overflow of which discharges into the town sewers.

In justification of the system here employed let the architect speak for himself:—"We think," says De Montferrand, "the mode we have adopted superior to that of any other cupola. For what can be more absurd than those vaultings raised 250 or 300 feet in air—whose frightful weight, unceasingly in action, tends to disunite the points of support which uphold them. Our new system offers a stable combination, which allows of no disunion—which has no thrust, and which reduces to a tenth the weight of any previous combination. In our plan, the iron and bronze entablature of the peristyle of the drum is not a mere architectural embellishment: it is a solid girdle, which embraces firmly the dome, so as to give it a great stability: and can the superiority of this system be contested, when it is considered, that here is employed the material which can alone, with prudent care, brave the effects of a rigorous climate?"

The arches and vaults of the nave and transepts, and the soffits of the porticoes are carried out in like manner by means of cast-iron girders, to which are attached the marble facings and decorative embellishments.

The roofing is wholly of iron, covered with copper. There are thirty-four small columns of cast-iron, resting on the walls and vaultings of the ceiling. These are tied together by a series of inverted queen trusses of wrought and cast iron mixed, about 6 feet apart, with wrought iron lathing to receive the copper. The whole presents a very light effect, and is very simple in its combination; and although the roof rises about 9 feet above the level of the attic outside, yet it is not seen unless by those at a very great distance from the building.

In determining the thickness of the drum of the cupola, M. de Montferrand has adopted the principle laid down by Fontana, of making the thickness of this cylindrical wall equal one-tenth of the internal diameter; although Rondelet and others allow a much less thickness. Notwithstanding, a substantial base for this great thickness of wall and the projecting architectural embellishments of the dome, is afforded by the pendentives, which rise from the four great piers of the dome, and form the circle for the cylinder of the drum.

The raising of the monolithic shafts of the twenty-four columns of the exterior peristyle of the dome,—each of which weighed near 66 tons,—to the height of 150 feet, was an operation requiring considerable skill. Each shaft was surrounded by a stout casing, to which were attached strong cables. It was then placed on an immense truck, calculated for the size of the vast block, and drawn by capstans upon an easy incline to a platform, which was on a level with the tops of the columns of the interior order, 42 feet high. Upon this platform was a moveable incline, 92 feet high, but with a very sharp rise, and up this the monolith was again drawn by capstans. At the summit was a large platform, 180 feet square, upon which was a moveable wooden framework, answering the purpose of a crane, with blocks and falls. There were twelve capstans around this framework. The monolith being dragged up the incline, reached the summit, and, by its own weight tilting over, reached the framework; it was then by it raised to a vertical position and gradually lowered on a granite die prepared to receive it, and which was cased with a bronze base.

As soon as one monolith was in its place, the moveable incline and the moveable platform and frame were all wheeled round ready to raise the next column; and so on the operation was repeated until the whole series were securely fixed in their respective places. It only required two hours to raise one of the shafts from the platform on a level with the capitals of the inner order, and to fix it on its base. 300 men performed this operation: the most perfect order and silence were maintained throughout, and the different movements directed by the sound of a bell. A silver rouble was placed on the base of each column in a hole sunk for the purpose.

The first column was raised on the 17th November, 1837, just eleven years ago from this period: nor was the operation commenced without prayers to Almighty God to bless the undertaking with success. In two months the twenty-four columns were completely fixed, and, be it remembered, in the very depth of a Russian winter.

The skeleton of the entablature of the peristyle of the dome is of cast and wrought iron, resting on the columns, and affixed to them by wrought iron pins, which are let a considerable depth into the shafts; and the framework is also let into the cylindrical wall of the dome, securely affixed to three templates. The cornice, with its modillions and mouldings, rest on cast-iron corbels; the caissons and rosettes of the inner soffit also rest on cast iron girders. The balustrading above is similarly framed, and the pedestals support bronze figures of angels, already mentioned, holding their attributes, each 9 feet high, and of only a single casting, weighing 1¼ tons. The balusters are also of bronze.

I may perhaps be permitted to observe that the bronze bases, capitals, figures, and other decorative details of this material on the outside are neither gilt nor painted, consequently the dark tone of these parts has a heavy appearance, and ill accord with their purpose and the stonework of the outer facing.

In the presence of such an assembly, so competent to judge of the merits of this important monument of our art, it would ill become me to offer any remarks, other than those which I have already made, upon the most striking points in regard to taste and skill, which distinguish this production of our honorary member. He has chosen the most appropriate materials, and has with considerable skill applied to his construction the improved system which cast-iron presents. I have not stopped to consider whether he has adopted all the expedients which we should consider necessary for counteracting the expansion and contraction to be expected in ironwork; particularly as regards the movement which might be expected at the feet of the ribs of the dome, and which possibly we might have regulated by rollers, and by allowing space for the development to be expected in a warmer temperature. The interval of ten years must have proved the efficacy of his provisions, and I should ill requite the courtesy of our generous donor were I to analyse with the severity of a critical eye the proportions and details of this remarkable monument. The unsparing nature of the materials employed prove the pious liberality of the emperor and the nation. The careful skill with which the architect has fulfilled his part, and the deep feeling for decorative art with which he has embellished the cathedral of the Russian capital, and the brief space of time in which he has erected the lofty pile, must ever render the Church of S. Isaac one of the most striking edifices of the nineteenth century. THOS. L. DONALDSON.

## APPOINTMENT OF SUPERINTENDING INSPECTORS UNDER THE HEALTH ACT.

SIR,—It seems to me desirable the public should know what very clever fellows the Board of Health have appointed, and intend to appoint, as superintending inspectors. I therefore send you the following extracts from their reply to applicants, so that you may hereafter, with your accustomed acumen and impartiality, test performance by promise. It is delightful to find that interest and personal friendship will have no weight, but that the men who understand, and have long worked in the sanitary cause without reward, may look for the advantage of these appointments.

D.

"That the board may be enabled to judge of the positive as well as of the relative ability of the candidates for employment in this service, they will require, in addition to the ordinary testimonials as to general ability and moral trustworthiness, to be furnished with proofs of a special aptitude for originating, expounding, and superintending the execution of the class of works in question. In the Public Health Act you will find set down the various duties of a superintending inspector, and, among others, that of dealing with the owners and occupiers of districts, in the way of exposition, examination, and judicial decision." * * *

"As the means of enabling the board to judge of your application, they would ask you to lay before them your views of the means of remedying the defects. To this end they would wish you to state, in the first place, the general principles which, during an inquiry and inspection of any city or town, would govern your determination of the boundaries which might be most advantageously adopted for the purposes of the Public Health Act, and then to select or suppose some case of defective house and Land drainage, water supply, and cleansing, and shew in detail the way that you would treat it. Take, for example, a small provincial town or large village, or a detached suburban district of five or six hundred houses, or an undrained heavy clay or marshy site, and, it may be, affected with ague or typhus." * * * *

"In the next place, you would require to shew how you would select, gather, store, and distribute water for domestic use, for cleansing, and for the prevention of fires, with the character and cost of the works; and also to state the principles that would guide your procedure in this important department. It will be most to the purpose to choose for this purpose a town with no suitable river water at hand. The qualities requisite in water to be supplied to towns, the materials to be employed in water works, their sizes and proportions, and the amount of supply necessary for a given population, are, you are aware, all essential to be attended to. The paving of streets, of the different classes of main and secondary streets and courts, including the materials, the method of forming the foundation, the form and inclination of the surface, with the cost of work, would also require to be given, in reference to any place you might select or suppose, and also the means you would adopt for cleansing streets and courts, and for disposing of the refuse. The disposal of solid refuse from the habitations would likewise have to be provided for. You will, moreover, be expected to give a very precise and detailed account of your views as to house drainage. One of the chief objects of sanitary works being the immediate removal of all decomposing refuse soil and waste water from around, amidst, or beneath human habitations, it is desirable that you should fix upon a house, for example, one of the fourth class, or of the kind inhabited by the labouring population, and shew by what arrangements and apparatus, and with what materials, forms, sizes, and construction, and at what price you would accomplish this object. The same ought also to be done for blocks of houses. It would be requisite to distinguish between the cases of old houses and the applications that you would propose for new buildings or new districts.

You ought further to shew by what methods you would avoid the retention of solid decomposing refuse in the neighbourhood of habitations, as well as the pollution of river with soil-water, and at what expense you would accomplish these objects."

## RAILWAY JOTTINGS.

THE mere depreciation of railway stock about the middle of last month, was estimated by Manchester shareholders, at "upwards of 120,000,000*l.*,—that is, nearly one-sixth of the national debt!"——With regard to such formidable amalgamations of capital as those of the abandoned three Westerns, and the two Easterns, lately proposed, but referring specially to the former, *Herepath* says, "it is more dangerous to the public in other respects than mere cost and inconvenience of transport. The united capital of the three Companies is admitted to be 52,000,000*l.* excluding the shelved branches and extensions; and the length of lines which they possess and have an interest in, excluding again those put on the shelf, are 2,030 miles; and the united territory which they propose to monopolise, taking half of England, the whole of Wales, only one-third of Scotland, and none of Ireland, is nearly 43,000 square miles. With such power as this, backed by the patronage of 52,000,000*l.* of money, turning in a revenue exceeding 5,000,000*l.* per annum, which it probably will, what ministry could stand against it? *It would be like putting the ballast of the state vessel all on one side.*"——In the *Bristol Mirror* lately, there was a piece of wholesome satire in the shape of a letter from a wife, thanking the Great Western Directors for putting a stop to the return ticket system, not on the ground that it prevented her husband's returns to Bristol, but that it prevented at least one half of his flights to London altogether. She says that he used to go twelve times a year, *because* the trip was so cheap and so quick, but now she has to thank the Directors not only for keeping her husband at home, but for buttoning up his pocket, in place of leading him into the temptation of unbuttoning it that they might pocket his cash themselves, as they used to do. The whole *expense* to the Company of carrying a person between Bristol and London, says *Herepath*, is under

For more information on OCR and PDF Compression visit ThePaperlessOffice.org